



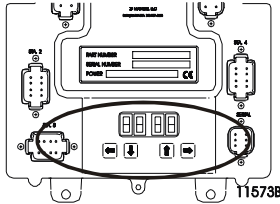
5 SET UP PROCEDURE

The Processor utilizes push buttons in conjunction with Display LED's to program, adjust, calibrate and set up the various features. The push buttons also allow you to access and display information regarding the health of the System.

The following paragraphs explain how to locate and use the push buttons and Display LEDs:

5-1 Processor Components Used In Set Up

Figure 15: Processor Display LED and Arrow Push Buttons



Each Processor has a Display LED and Arrow Push Buttons located on the front cover. (Refer to Figure 15:)

- The **Display LED** is to view the Function Codes and Values. It consists of four 7-segment display pads.
- The **Arrow Push Buttons** are used to scroll through and select the Function Codes, and set the Values.

5-1.1 Processor Display LED

Figure 16: Display LED at Normal Operation

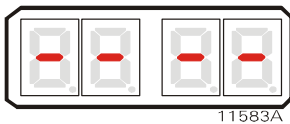
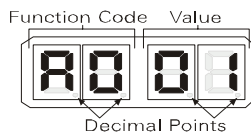


Figure 17: Display LED Designations



- The Processor's Display LED has four 7-segment LED's, which light up to show either letters or numbers.
- The Display LED during Normal operation has running red center dash lines (Figure 16:)
- The first two digit Display LED's to the left, indicate the **Function Code**, which is alphanumeric.
- The second two digit Display LED's indicate the numeric **Value** that is currently programmed into the Processor for the Function Code displayed to the left.
- A **decimal point** indicator is located on the bottom right corner of each Display LED. (Figure 17:)

5-1.2 Push Buttons

Figure 18: Arrow Push Buttons



There are four Push Buttons with arrows located below the Display LED on the Processor cover. These push buttons are used to scroll through, select, and store the Functions and Values. The direction of the arrow indicates "Left", "Down", "Up", and "Right".

5-1.2.1 "Up" and "Down" Push Buttons

Pressing the "Up" or "Down" Push Buttons *once* has the following functions:

- Stops Normal Operation Display (running red center dash lines) and activates the **Function Menu**.
- While in the **Function Menu**, scrolls through the Function Codes one at a time.
- When in Set Up Mode, increases (Up) or decreases (Down) the Function Value one digit at a time.
- When an Error Code is displayed, scrolls through the error messages one at a time.



NOTE: Refer to Appendix B - TROUBLESHOOTING ERROR CODES for steps to be taken for Error Messages.



5-1.2.2 "Left" and "Right" Push Buttons

Pressing and **holding** the "Left" and "Right" Push Buttons *at the same time* has the following functions:

- Activates Set Up Mode as indicated by the blinking Display LED. (Operator must hold the buttons down until the blinking begins, then release.)
- While in Set Up Mode, deactivates Set Up Mode, saves the displayed Value to memory, and returns to the **Function Menu**. (Operator must **hold** the buttons down until the blinking stops, then **release**.)

5-1.2.3 "Left" Push Button Only

Pressing the "Left" Push Button **once** has the following functions:

- Deactivates Set Up Mode WITHOUT any changes to the Function Value stored in memory. (Operator must **hold** the button down until function code stops blinking, then **release**.) The previously saved Function Value will then be displayed.
- While in **Function Menu**, changes the Display LED to the **Error Menu**, if any errors are present. (has no effect if there are no errors stored)
- While in the **Error Menu**, changes the Display LED back to the **Function Menu**.

Figure 19: Error Menu Example



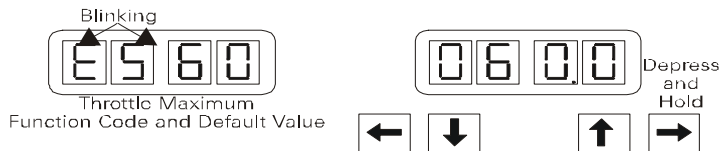
5-1.2.4 "Right" Push Button Only

Pressing the "Right" Push Button **once** has the following function:

- While in the **Error Menu**, clears inactive errors. (Active errors blink, inactive do not)

Pressing and **holding** the "Right" Push Button has the following function:

Figure 20: Display LED Four Digit Value



- While in Set Up Mode, or **Function Menu**, allows the Function Value of the current Function Code to be displayed with all four Display LEDs.

5-2 Activating Set Up Mode



NOTE: To **Escape** from the Set Up procedure at any time without saving the changed value to memory, depress the "Left" **Arrow Push Button** **once**. The Function Code will stop flashing and the Function will be saved with the original Value.

- The Display LED is in Normal operating condition with the running red center dash lines.
- Depressing either the "Up" or "Down" Arrow Push Button will **ACTIVATE** the **Function Menu**.
- Depressing the "Up" or "Down" Arrow Push Button will **SCROLL** through the **Function Menu** Function Codes, one at a time.
- Once the desired Function Code is visible on the Display LED, press and **hold** the "Left" and "Right" Arrow Push Buttons *at the same time*, until the Function Code begins to blink. This will activate Set Up Mode.
- Depressing the "Up" Arrow Push Button will **INCREASE** the Value of the Function, while pressing the "Down" Arrow Push Button will **DECREASE** the Value of the Function. (Pressing and **holding** the "Up" or "Down" Arrow Push Button will **INCREASE** or **DECREASE** the Function Value rapidly.)



5-3 Storing Values To Memory

Once the desired Value has been reached in Set Up Mode, the Value is stored to memory as follows:

- A) Depress and **hold** the "Left" and "Right" Arrow push buttons until the Function Code stops blinking.
 - The new Value is now programmed into memory.
 - Set Up Mode is exited.
- B) Depress the "Up" or "Down" Arrow Push Button until the next required Function Code is reached.
- C) Reactivate Set Up Mode. Refer to Section 5-2.



NOTE: If no Push Buttons are pressed for five (5) minutes, the selected Mode of operation is automatically exited and the System returns to Normal Operating Mode. If no Push Buttons are pressed for five (5) minutes while in Set Up Mode, it will be exited without the changes stored to memory

5-4 Function Codes And Values

The following tables list the Function Codes' Name, Default Value and Range or available Options. **Each of the Function Codes are explained in further detail in the following sections.**



NOTE:

SINGLE SCREW APPLICATIONS: The Function Values may be entered and stored in any order.

MULTI SCREW APPLICATIONS: The A1 Function must be set **FIRST**, and the A0 Function must be set **SECOND**. The rest of the Function Values may be entered and stored in any order.

Once these parameters are set, either cycle power to the Processors or wait five (5) minutes, before continuing set up.



CAUTION: If ZF Hurth Gears are used, set the L1 parameter as the next setting **AFTER** the A1 and A0 parameters have been set.



NOTE: Once these parameters are set, either cycle power to the Processors or wait five (5) minutes, before continuing set up.

Table 3: Processor Function Codes

Function Code	Function Name	Default Value	Value Range or Options
A0	Processor Identification	01	01, 02, 03, 04, 05
SET FUNCTION A0 AFTER THE A1 FUNCTION CODE HAS BEEN SET. Each Processor MUST have a unique Processor ID #.			
A1	Number of Engines	01	01, 02, 03, 04, 05
IN MULTI SCREW APPLICATIONS, THE A1 FUNCTION CODE IS TO BE THE FIRST (1ST) PARAMETER SET.			



IMPORTANT: If ZF Hurth Gears are used, set the L1 parameter after A1 and A0.

A2	One Lever Operation	00	00 - Disabled 01 - Enabled
A3	Station Expander (SE)	00	00 - Disabled 01 - Enabled

DO NOT ADJUST THE ABOVE FUNCTION! Leave at default Value set by the Factory. Contact a ZF Marine Electronics Authorized Technician If this Function requires adjustment.



A4	Neutral Indication Tone	00	00 - No Tone 01 - Tone upon Control Head engaging Neutral 02 - Tone upon Transmission shifting to Neutral
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Table 4: Electric Throttle Function Codes

Function Code	Function Name	Default Value	Value Range or Options
E0	Engine Throttle Profile	06	1 - Caterpillar (PWM) (8 to 92%) 02 - Cummins Centry (Voltage)(0.9 to 4.5 VDC) 03 - Cummins Quantum(Voltage)(0.9 to 1.2- 4.0 VDC) 04 - Detroit Diesel (Voltage) (0.64 to 4.65 VDC) 05 - MTU or MAN (Current) (4.0 to 20.0 mA) 06 - Scania (Voltage) (0.42 to 2.95 VDC) 07 - John Deere (Voltage) (0.5 to 4.5 VDC) 08 - Volvo (Voltage) (0.6 to 3.6 VDC) 09 - Detroit Diesel 1800 (Frequency)(120.64 to 360.9 Hz) 10 - Detroit Diesel 2300 (Frequency) (120.64 to 463.5 Hz)
** DEFAULT BASED ON THROTTLE PROFILE SELECTED.			
E1	Throttle in Neutral	**	01.0% to 25.0% of Throttle Range [Throttle Range = Throttle Max (E3) - Throttle Min (E2)]
E2	Throttle Minimum	**	1.0% to 97.0% Must be 3% or more below Throttle Maximum (E3)
E3	Throttle Maximum	**	04.0% to 100.0% of Maximum Throttle Allowable. Must be 3% or more above Throttle Minimum (E2)
E4	Throttle Maximum Astern	100.0	01.0 to 100.0% of Throttle Maximum (E3)
E5	Throttle Pause Following Shift	00.5	00.0 to 05.0 Seconds
E6	High Idle	00.0	00.0 to 20.0% of Throttle Maximum (E3).
E7	Active Synchronization	00.	00 – Disabled 01 - Enabled

Table 5: Clutch Function Codes

Function Code	Function Name	Default Value	Value Range or Options
C0	Clutch Pressure Interlock	00	00 – Not Installed 01 – Installed 02 – Throttle Clutch Pressure Interlock Mode
C1	Clutch Interlock Delay	01.0	00.5 to 10.0 Seconds
C2	Proportional (Reversal) Pause	00	00 – In-Gear; 01 – Neutral
C3	Proportional (Reversal) Pause Time	03	00 to 99 Seconds
C4	Proportional (Reversal) Pause Ratio	00	00 – 2:1 Ahead to Astern vs. Astern to Ahead 01 – 1:1 Ahead to Astern vs. Astern to Ahead

Table 6: Trolling Valve Function Codes

Function Code	Function Name	Default Value	Value Range or Options
L0	Troll Enable and Control Head Troll Lever Range	00	00 – No Troll 01 – 20 Degrees- Type 1 02 – 35 Degrees- Type 2 03 – 45 Degrees- Type 3 (Throttle limited to 75% of Throttle Range)
The following L1 parameter MUST be the THIRD Function set if ZF Hurth Gears are used.			



L1	Troll Valve Function	00	00 - Normal, (No Current when at Lock-up) 01 - Inverse (No Current when at Lock-up) 02 - Normal (Maximum Current when at Lock-up) Preset for ZF220-550, 12VDC Systems. 03 - Normal (No Current when at Lock-up) Preset for ZF220-550, 24VDC Systems. 04 - Normal (No Current when at Lock-up) Preset for ZF2000, 24 VDC Systems. 05 - Inverse (No Current when at Lock-up) Preset for ZF600, 1900 and 2500, 24VDC Systems. 06 - Preset for 12VDC ZF Hurth Systems with two (2) proportional solenoids. 07 - Preset for 24VDC ZF Hurth Systems with two (2) proportional solenoids
L2	Troll Minimum Pressure	10.0	01.0 to 99.0% Must be at least 1% more or less than Troll Maximum (L3) [DEPENDING on whether Normal or Inverse is selected].
L3	Troll Maximum Pressure	10.0	02.0% to 100.0% Must be at least 1% more or less than Troll Minimum. (L2) [DEPENDING on whether Normal or Inverse is selected].
L4	Troll Throttle Limit	00	00 to 20% of Troll Maximum (L3)
L5	Troll Pulse Duration	00	00.0 to 09.9 Seconds.
L6	Troll Pulse Percentage	25.0	00.0 to 100.0%
L7	Lock Up Percentage (Hurth Only)	45 (L106) 60 (L107)	00.0 to 100.0% Used only when L106 or L107 is selected.

Table 7: Troubleshooting Function Codes

Function Code	Function Name	Default Value	Value Range or Options
H0	Diagnostic	none	Input Voltage (+/- 0.5VDC) Tachometer Sensor Frequency Lever A/D, Stations 1, 2, 3, & 4 Transfer Button, Stations 1, 2, 3, & 4 Software Revision Level
H1	Erase EPROM	none	Return to Factory Defaults (For Authorized Personnel Only)
H2	Driver Fault Detection Enable	00	00 - None Enabled Allows the Processor to monitor the clutch and/or troll solenoids.

5-5 Field Service Test Unit (Break-out Box) and Multimeter Use

Refer to Appendix A - MM13927 Manual for more information on the use of the Field Service Test Unit (Break-out Box).

To aid in adjusting the following list of Processor signals, ZF Marine Electronics recommends the use of a ZF Marine Electronics Field Service Test Unit (P/N 13927) (Break-out Box) and a calibrated Multimeter.

Table 8: Electric Throttle Functions requiring Field Service Test Unit and Multimeter

Code	Function Name	Code	Function Name
E1	Throttle in Neutral	E4	Throttle Maximum Astern
E2	Throttle Minimum	E6	High Idle
E3	Throttle Maximum		